

- e) a tone detector connected to the port, the tone detector comprising an input for receiving a signal from the telephony connection and a discriminator for identifying a signal indicative of a waiting call; and
- f) a signal generator connected to the tone detector and configured to generate a signal when a call waiting signal has been detected, whereby a user of the computer can be alerted to the waiting call.

The signal generator preferably communicates with alert generation software resident on the computer, said software comprising instructions effective to recognise a signal from the signal generator and to generate an alert to a user of the computer via said interface.

- 10 The alert may include an option for the user to terminate an existing data session under the control of the telecommunications manager, and the interface may further include an input device for enabling the user to select the option.

Thus, a user on the Internet would typically see an alert dialog box with an indication of a waiting call on the line when the call waiting signal is detected, and an option in the dialog box would allow the user to close the Internet connection (if desired) when the call is being answered. Alternatively, the user might decide to place the Internet call on hold and take the waiting call, in which case the telephony control software on the computer could generate the necessary call control signals. The incoming call can be answered using a conventional handset connected to the telephony connection or a virtual handset on the computer itself.

- 20 The software for the virtual handset could be launched automatically when the user selects to take the incoming call.

Thus, the system preferably further includes a call control signal generator for outputting a call control signal to the connection to control the remote handling of the waiting call and/or the data session.

- 25 The output device may be a loudspeaker in which case the alert includes an audio alert, or the output device may be a display unit and the alert is a visible alert displayed on the display unit. Both audio and visual alerts can be issued.

The telecommunications manager can control a modem connected to the port and the input to the tone detector may be taken from the input or output of the modem.

Preferably, the tone detector and the signal generator are embodied on a PC card mounted on the computer.

- 5 The invention further provides a computer program comprising instructions which when executed on a computer are effective to cause the computer to:
- a) monitor a telephony input signal to the computer during a data transfer between the computer and a telephony connection;
 - b) detect a signal indicative of a waiting call available from the telephony connection;
 - 10 and
 - c) upon detection of a signal indicative of a waiting call, generate a signal to the computer whereby an alert can be provided to a user of the computer via an output device of the computer.

In a preferred embodiment, the instructions are implemented in the firmware of a PC card.

- 15 The invention further provides a piece of software effective to:
- a) monitor a PC card input signal to the computer for a signal indicative of a waiting call detected by the PC card; and
 - b) upon detection of a signal indicative of a waiting call, generate an alert to a user of the computer via an output device of the computer.
- 20 The alert may include a user-selectable option to terminate the data transfer (i.e. transfer to the call while ending the data transfer) or to place the data transfer on hold (i.e. toggle between calls).

- The program can include instructions to present a user with a tool for selecting one or more signals indicative of a waiting call from a plurality of candidate signals accessible from the
- 25 computer, in the configuration mode.

The software is then used to configure the PC card by programming it with the identity of the call waiting signal which it should monitor for.

- The invention provides, in another aspect, a database comprising a plurality of signal identifiers, each signal identifier being characteristic of a call waiting signal generated by a PSTN exchange and enabling a match to be made between the identifier and an incoming telephony signal to a computer connected to the exchange.

A further aspect of the invention provides a method of alerting a user of a computer to a waiting call available from a telephony connection to which the computer is connected, the method comprising the steps of:

- 10 a) monitoring a telephony input signal to the computer during a data transfer between the computer and a telephony connection;
- b) detecting a signal indicative of a waiting call available from the telephony connection; and
- 15 c) upon detection of a signal indicative of a waiting call, generating an alert to a user via an output device of the computer.

further comprising the step of providing a user of the computer with an option to terminate or place on hold the existing data session.

- The invention also provides a telecommunications system comprising a connection to a telephony network, a computer system connected to the connection and a telephony terminal connected to the connection, wherein the computer system comprises:

- 20 a) a port for the telephony connection;
- b) a processor;
- c) a telecommunications manager for managing the transfer of data between the processor and the port;